

NOTE

First Report of *Hyalomma marginatum isaaci* Sharif (Acari: Ixodida: Ixodidae)
from the Union of Myanmar, with a Concurrent Collection of *H. hussaini* Sharif

Though members of the biomedically important tick genus *Hyalomma* are chiefly associated with the vast xeric biomes of the southern Palearctic and Afrotropical Zoogeographic Regions (Hoogstraal 1973), two species—*H. hussaini* Sharif and *H. marginatum* Koch—have occasionally been reported from continental southeastern Asia (i.e., the Oriental Zoogeographic Region), where they apparently occur as small, widely disjunct populations in areas that are prone to dryness for at least a portion of the year (Kaiser and Hoogstraal 1964, Petney and Keirans 1995). Between 17 and 29 November 2000, one of us (SGP) participated in a herpetological expedition to the Minzontaung Wildlife Sanctuary (MWS), located within the dry zone of central Myanmar (formerly Burma), approximately 60 km southwest of Mandalay in Nwahtogyi Township, Myin Gyan District, Mandalay Division. On 24 November, at the end of the day's fieldwork, SGP and an associate each removed from his clothing a single male/female pair of *Hyalomma*; these were subsequently identified as *H. hussaini* and *H. marginatum isaaci* Sharif, the latter a new record for Myanmar.

Established in 1998–1999 for the protection of Eld's deer, *Cervus eldii* M'Clelland, MWS currently comprises 2,260 ha and is dominated by Minzon Taung, an isolated hill range with a maximum elevation of 398 m. The surrounding lowlands are 200–225 m above sea level and generally flat, except for a few deep gorges cut by watercourses. Previously, this area had been largely deforested by burning, fuelwood extraction, and livestock grazing, but the vegetation is rapidly regenerating from stump sprouts, and average canopy heights now exceed 4 m. The flora of MWS is similar to the thorn

forest and thorn scrub associations described by Stamp and Lord (1923). Dominant trees include three species of *Acacia* (*A. arabica* (Lamarek) Willdenow, *A. catechu* (L. filius) Willdenow, and *A. leucophloea* Willdenow), *Tectona hamiltoniana* Wallich, *Terminalia oliveri* Brandis, and the exotic *Prosopis juliflora* (Swartz) Candolle. Dense stands of grasses, such as *Apluda mutica* L., *Diectomis fastigiata* (Swartz) Palisot de Beauvois, and *Grewia microcos* L., occur in open areas. Patches of Indaing forest, characterized by *Dipterocarpus* spp., *T. hamiltoniana*, *Xylia dolabriformis* Benth., and scattered clumps of bamboo (*Dendrocalamus strictus* (Roxburgh) Nees), occupy the upper slopes and deep ravines on the eastern face of Minzon Taung. Some areas, especially along the sanctuary's northwestern and southwestern borders, continue to be intensively grazed by sheep and goats, and the lack of evident forage suggests that livestock numbers exceed sustainable levels. Agricultural lands centered on several villages surround MWS, with the result that little natural vegetation remains outside sanctuary boundaries.

Of particular importance to studies of tick distribution in MWS is the climate of central Myanmar, an area that lies within the rain shadow of the Arakan Yoma Mountains (Robbins and Platt 2001) and is therefore exceptionally dry. An attenuated monsoonal wet season, marked by erratic showers, moderate temperatures and overcast skies, extends from June to October, followed by a prolonged dry season that lasts from October to late May (Terra 1944, Roberts et al. 1968, Scott 1989). Annual precipitation in central Myanmar ranges from 50 to 100 cm (Terra 1944), MWS itself being astride the 30 in. (76 cm) isohyet of

Stamp and Lord (1923). There are no permanently flowing streams in MWS, and surface waters of all kinds are extremely limited during much of the year. In addition, central Myanmar experiences high diurnal temperatures during the dry season (maximum 43°C), and low nocturnal temperatures over the winter months (January–February, minimum 4°C) (Food and Agriculture Organization/United Nations Development Programme 1982).

The prevailing climate, topography, and human land use patterns in and around MWS are reminiscent of South Asian conditions well west of Myanmar, where *H. hussaini* and *H. marginatum isaaci* are regular components of the acarofauna. Though previously reported from central Myanmar, *H. hussaini* chiefly occurs in India and Pakistan (Kaiser and Hoogstraal 1964), most Indian collections having come from the north-central and northeastern states west of Bangladesh (e.g., Bihar, Madhya Pradesh, Madras, Maharashtra, Orissa) (Sharif 1928). Collections have also been made in Gujarat State on the Arabian Sea (Hiregaudar 1968). Interestingly, there appear to be no records of this xerophilous tick from India's humid easternmost states, which lie between Bangladesh and Myanmar (Geevarghese and Dhanda 1987).

Hyalomma marginatum isaaci is a widespread South Asian tick, occurring from Afghanistan, Pakistan, Kashmir and Nepal south through India to Sri Lanka (Kaiser and Hoogstraal 1964). Unlike *H. hussaini*, *H. marginatum isaaci* has been recorded from Arunachal Pradesh State (formerly the North-East Frontier Agency), bordering Myanmar (Dhanda and Rao 1964), so its presence at MWS is less surprising. Moreover, occasional reports from central and southeastern Vietnam of specimens closely resembling *H. marginatum isaaci*—namely, Toumanoff's (1944) *H. dromedarii indosinensis*, corrected by Hoogstraal (1956) to *H. marginatum*, and classified by Kolonin (1992, 1995) as *H. m. indosinense* Toumanoff—suggest that this complex may be thinly

distributed throughout the humid tropics of southeastern Asia and hint at the possible topographic provenance of Minzontaung specimens.

During the Minzontaung expedition, collectors fanned out over the entire sanctuary, some remaining in the lowlands, while others hiked into high country. Though daily collector itineraries are unavailable, it may be that our pair of *H. hussaini* transferred to the clothing of a collector working in dry lowland scrub. However, *H. marginatum isaaci* may only have been encountered by entering the somewhat moist, high-altitude forests on Minzon Taung proper, where environmental conditions approximate those at Vietnamese localities that have yielded related representatives of the *H. marginatum* complex.

Our collections of *H. hussaini* (RML 123220) and *H. marginatum isaaci* (RML 123221) have been deposited in the U.S. National Tick Collection, Institute of Arthropodology and Parasitology, Georgia Southern University, Statesboro. We warmly thank the Wildlife Conservation Society, Bronx, New York, for supporting our fieldwork in Myanmar, and the Myanmar Forestry Department for granting permission to conduct research in MWS. Thanks also to Chief Warden U Khim Ag Soe and his wife for their generous hospitality throughout our stay. Field assistance was provided by Daw Aye Aye Cho, U Tin Lwin, U Win Ko Ko, Daw Khin Myo Myo, Daw Lay Lay Khaing, and Daw Thanda Swe. For logistical support and several critical references, we are grateful to U Saw Tun Khaing, U Thanh Minh, Stephan Johnson, and Thomas R. Rainwater. Portions of this research were funded by National Institute of Allergy and Infectious Diseases grant AI 40729 to JEK.

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